MATERIAL SAFETY DATA SHEET

SRM Supplier: **National Institute of Standards and Technology**
Standard Reference Materials Program
Bldg. 202 RM 211
Gaithersburg, Maryland 20899

SRM Number: 877
MSDS Number: 877
SRM Name: Column Performance Test Mixture for Liquid Chromatography
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SECTION I. MATERIAL IDENTIFICATION

Material Name: Column Selectivity Test Mixture for Liquid Chromatography

Description/Other Designations: SRM 877 consists of five solutions of chiral compounds in ethanol designed primarily to indicate enantioselectivity of chiral sationary phases for liquid chromatography and supercritical fluid chromatography. A unit of SRM 877 consists of five ampoules, each containing 1.1 mL of a solution of one racemic or enantiomerically enriched (nonracemic) compound. The five compounds are ketoprofen, indapamide N-carbobenzyloxy-phenylalanine (N-CBZ-phenylalanine), propranolol hydrochloride, and warfarin.

Name	Chemical Formula	CAS Registry Number
Ethanol	CH_3CH_2OH	64-17-5

DOT Classification: Flammable Liquid, UN1170

Manufacturer/ Supplier: Available from a number of suppliers

SECTION II. HAZARDOUS INGREDIENTS

Hazardous Components	Nominal Concentration (%)	Exposure Limits and Toxicity Data
Ethanol	99	ACGIH TLV-TWA: 1000 ppm or 1900 mg/m^3
		OSHA TLV-TWA: 1000 ppm or 1900 mg/m^3
		Man, Oral: TD_{LO}: 1430 µg/kg
		Child, Oral: LD_{LO}: 2 g/kg
		Mouse, Oral: LD_{50}: 3450 mg/kg
		Mouse, Inhalation: LC_{50}: 39 g/m^3/4 h
		Rabbit, Open Skin (mild irritation): 400 mg
		Rabbit, Eyes (moderate irritation): 500 mg

SECTION III. PHYSICAL/CHEMICAL CHARACTERISTICS

Ethanol
Appearance and Odor: a clear, colorless liquid with a characteristic alcoholic odor
Relative Molecular Mass: 46.07
Density: 0.7893 g/mL
Boiling Point: 172 °C
Freezing Point: -117 °C
Vapor Pressure (@ 19 °C): 40 mm Hg
Evaporation Rate (carbon tetrachloride = l): 1.4
Viscosity (@ 20 °C): 1.22 - 1.41 cP
Solubility in Water: soluble
Solubility in Other Solvents: soluble in ether, benzene, acetone, chloroform, methanol, ketones, and most other organic solvents

SECTION IV. FIRE AND EXPLOSION HAZARD DATA

Ethanol

Flash Point: 13 °C **Method Used:** ASTM D-56 Tag Closed Cup **Autoignition Temperature:** 363 °C

Flammability Limits in Air (Volume %): **UPPER:** 19
LOWER: 3.3

Unusual Fire and Explosion Hazards: Ethanol is a severe fire and explosion hazard when exposed to heat or flame. Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. Vapor and air mixtures are explosive.

Extinguishing Media: Use alcohol-resistant foam, dry chemical, carbon dioxide, or water spray.

Special Fire Procedures: Fire fighters should wear a self-contained breathing apparatus (SCBA) with a full face piece in the pressure demand or positive mode and other protective clothing.

SECTION V. REACTIVITY DATA

Stability: **__X__ Stable** **_____ Unstable**

Conditions to Avoid: Avoid contact with heat, sparks, flames, or other sources of ignition. Avoid inhalation of vapors or combusion by-products. Avoid contact with the skin. Do not allow the material to contaminate water sources.

Incompatibility (Materials to Avoid): This material is incompatible with halo carbons, combustible materials, metals, metal salts, oxidizing materials, peroxides, metal oxides, halogens, bases, and acids.

See Section IV**:** *Unusual Fire and Explosion Hazards*

Hazardous Decomposition or Byproducts: Thermal decomposition products may include toxic oxides of carbon.

Hazardous Polymerization: **_____ Will Occur** **__X__ Will Not Occur**

SECTION VI. HEALTH HAZARD DATA

Route of Entry: **X** **Inhalation** **X** **Skin** **X** **Ingestion**

Ethanol: Ethanol may be fatal if swallowed, inhaled, or absorbed through skin. Ingestion may be fatal or cause blindness. Vapor or mist is irritating to the eyes, mucous membranes, and upper respiratory tract. This material cause skin irritation and/or central nervous system depression. Exposure can cause damage to the eyes, liver, heart, and kidneys. Symptoms of overexposure may include headache, drowsiness, lack of concentration, dizziness, lack of coordination, blurred vision, fatigue, pain, nausea, and vomiting.

Medical Conditions Generally Aggravated by Exposure: Ethanol may cause central nervous system disorders, kidney disorders, and liver disorders.

Listed as a Carcinogen/Potential Carcinogen:

	Yes	No*
In the National Toxicology Program (NTP) Report on Carcinogens		X
In the International Agency for Research on Cancer (IARC) Monographs		X
By the Occupational Safety and Health Administration (OSHA)		X

***** NTP classifies alcoholic beverage consumption as Known to be a Human Carcinogen: IARC classifies alcoholic beverages as Group l: Carcinogenic to Humans.

NOTE: Ethanol and water are the main components of all alcoholic beverages.

EMERGENCY AND FIRST AID PROCEDURES:

Skin Contact: Remove contaminated shoes and clothing. Rinse affected area with large amounts of water followed by washing the area with soap and water. Watch for chemical irritations and treat them accordingly. Obtain medical assistance if necessary.

Eye Contact: Immediately flush eyes, including under the eyelids, with copious amounts of water for at least 15 minutes. Obtain medical assistance.

Inhalation: If inhaled, move the victim to fresh air. If breathing is difficult, give oxygen; if the victim is not breathing, give artificial respiration. Obtain medical assistance if necessary.

Ingestion: If ingested, wash out mouth with water. Obtain medical assistance immediately.

TARGET ORGAN(S) OF ATTACK: Ethanol: heart, central nervous system and liver

SECTION VII. PRECAUTIONS FOR SAFE HANDLING AND USE

Steps to be Taken in Case Material Is Released or Spilled: Notify safety personnel of major spills and/or leaks. Evacuate nonessential personnel. Stop the leak if one can do so without risk. Absorb small spills with sand or other absorbent material and place into containers for disposal.

Waste Disposal: Follow all federal, state, and local laws governing disposal.

Handling and Storage: Persons handling this material must wear protective eyewear, clothing, and gloves to prevent contact with this material.

NOTE: Contact lenses pose a special problem; soft lenses may absorb irritants and all lenses concentrate them. **DO NOT** wear contact lenses in the laboratory.

This material should be stored in a cool, dry, well-ventilated area away from incompatible materials and conditions. Protect containers from physical damage.

SECTION VIII. SOURCE DATA/OTHER COMMENTS

Sources: MDL Information Systems, Inc., MSDS *Ethyl Alcohol*, 01 June 2000.
Merck Index, 11th Ed., 1989.
The Sigma Aldrich Library of Chemical Safety Data, Ed. II, 1988.

Disclaimer: Physical and chemical data contained in this MSDS are provided only for use in assessing the hazardous nature of the material. The MSDS was prepared carefully, using current references; however, NIST does not certify the data on the MSDS. The certified values for this material are given in the NIST Certificate of Analysis.